

Amendments to the Specification

Please replace the last paragraph on page 1 spanning pages 1 and 2 with the following amended paragraph:

In the case of utilizing material as structural parts for fine tools used in an environment thermally influenced, it would become a serious problem caused by thermal expansion in accordance with a varying temperature ~~varying~~. For example, in the case of an artificial satellite, a temperature at a side confronting with the sun and a temperature at a side opposite to the sun are remarkably different so that installed fine tools are ~~baneful~~ banefully influenced by thermal expansion in such an environment. In a field of a semiconductor manufacturing device, an optical tool and a fine processing device, baneful influence caused by thermal expansion should be reduced as ~~less~~ much as possible.

Please replace the first full paragraph on page 2 with the following amended paragraph:

In a conventional art, although material having reduced coefficient of thermal expansion such as Inver alloy, quartz glass, carbon fiber reinforced resin composite material has been used, these are metal, silica system material or limited material. In the case of ~~the material~~ these materials, ~~its~~ their utility, strength, specific gravity and manufacturing cost would be restricted. ~~It is required a~~ A coefficient of ~~linear~~ linear expansion as ~~less~~ low as possible is required so as to utilize a fiber reinforced resin composite material in the various ~~field~~ fields described

above. In order to control a coefficient of linear expansion of fiber reinforced resin composite material, it is ~~prefer~~ preferable to use reinforced fiber and matrix resin of which a coefficient of linear expansion is low or substantially zero. However, it is not an actual way to provide the characteristic described above with respect to ~~the both~~ of the reinforced fiber and the resin matrix. There has been an experiment to reduce a total coefficient of ~~linearly~~ linear expansion by combining ~~fiber~~ fibers having a negative coefficient of linear expansion along a fiber direction and ~~fiber~~ fibers having a positive coefficient of linear expansion along the fiber direction so as to cancel these coefficients with each other.

Please replace the second full paragraph on page 2 with the following amended paragraph:

However, in the method, it would be difficult for ~~the both~~ of reinforced fiber and resin matrix to provide suitable characteristics. Upon considering strength and heat-resistant of the fiber reinforced resin composite material originally required, a material selection is so restricted.

Please replace the second full paragraph on page 3 with the following amended paragraph:

Regarding an in-plane quasi-isotropic material formed by reinforced fiber resin composite material according to the present invention, two ~~kinds~~ or more

~~than~~ kinds of reinforced fibers are combined, wherein at least one reinforced fiber having a negative coefficient of linear expansion is included. A respective sheet woven by one kind or more ~~than~~ kinds of reinforced fibers of which each coefficient of linear expansion is controlled is combined so as to reduce a total coefficient of linear expansion, wherein two kinds or more ~~than~~ kinds of reinforced fibers are formed as a strand in a condition of monofilament, yarn doubling or twisting yarn.

Please replace the last paragraph on page 3 spanning pages 3 and 4 with the following amended paragraph:

Under the above structure, a plurality of sheets formed by one kind or more ~~than~~ kinds of reinforced fiber in which a three dimensional structure of twisting yarn, biaxial textile or triaxial textile controls its coefficient of linear expansion are combined so as to provide an in-plane quasi-isotropic material by providing reinforced fiber resin composite material wherein the coefficient of linear expansion is reduced.

Please replace the first full paragraph on page 4 with the following amended paragraph:

Further, two or more ~~than~~ sheets made of reinforced fiber are combined wherein a coefficient of linear expansion of the respective reinforced fiber is different from each other and at least one reinforced fiber has a negative

coefficient of linear expansion so as to provide an in-plane quasi-isotropic material by providing reinforced fiber resin composite material wherein the coefficient of linear expansion is reduced. These kinds of reinforced fibers can be selected from various selections. Even if a reinforced fiber had an excellent elastic modulus and excellent chemical characteristics, the reinforced fiber could not have been utilized since the reinforced fiber has a negative coefficient of linear expansion. Unless a reinforced fiber had a proper coefficient of linear expansion, the reinforced fiber could not have been utilized. Nowadays, these reinforced fibers can be utilized in the present invention.

Please replace the first full paragraph on page 5 with the following amended paragraph:

Embodiments of these reinforced fibers may be yarn doubling of which the total coefficient of linear expansion is controlled or a strand formed by two kinds or more ~~than~~ kinds of reinforced fibers are bundled.

Please replace the first full paragraph on page 6 with the following amended paragraph:

In the present invention ~~as claimed in claim 4~~, a coefficient of linear expansion of a laminated reinforced structure is controlled by combining sheets with different coefficients of linear expansion made of different coefficients of linear

expansion. Regarding these sheets having different linear expansion-ratio ratios, a sheet aligned along one direction and a sheet formed by biaxial/triaxial textile may be utilized. A coefficient of linear expansion is controlled by laminating a predetermined number of pairs including two or more ~~than~~ sheets having different coefficients of linear expansion so as to reduce a coefficient of linear expansion of fiber reinforced resin composite material to a predetermined level as an in-plane quasi-isotropic material.

Please replace the fourth full paragraph on page 7 with the following amended paragraph:

Fig. 1 shows a principle how a coefficient of linear expansion of an in-plane quasi-isotropic plate according to the present invention is controlled to a predetermined level by combining a sheet 1 and a sheet 2 having different ~~coefficient~~ coefficients of linear expansion with respect to each other. In Fig. 1, one reinforced fiber has a negative coefficient of linear expansion. Regarding the other reinforced fiber, its coefficient may be relatively large (positive). By alternatively laminating the sheet 1 and the sheet 2 as shown in Fig. 1 in order to provide an in-plate quasi-isotropic plate and thermally hardening the plate, a coefficient of linear expansion formed as fiber reinforced resin composite material can be controlled to zero or a predetermined level.

Please replace the last paragraph on page 8 spanning pages 8 and 9 with the following amended paragraph:

Fig. 3(a) shows a one-way prepreg wherein fiber bundles A and B formed by reinforced fibers having different ~~coefficient~~ coefficients of linear expansion are aligned along one direction, Fig. 3(b) shows a biaxial textile prepreg and Fig. 3(c) shows a triaxial textile prepreg. The coefficient of linear expansion can be controlled to the predetermined level by alternatively aligning fiber bundles A and B having different ~~coefficient~~ coefficients of linear expansion with respect to each other. A product process of the material is as similar as that of normal reinforced fiber resin composite material.

Please replace the table on page 10 with the following amended table:

Fiber type	Tensile elastic modulus along a fiber direction kgf / mm ²	Coefficient of linear expansion along a fiber direction x 10 ⁻⁶ /°C
PAN-based carbon fiber (M50J)	48, 500	-1
PAN-based carbon fiber (M50J) (M60J)	60,000	-1.1
PAN-based carbon fiber (M50J) (T300)	23,500	-0.41
PAN-based carbon fiber (M50J) (M35J)	35,000	-0.73
Pitch-based carbon fiber (YS-35)	35,690	-1.1
Pitch-based carbon fiber (YS-60)	61,183	-1.5
Pitch-based carbon fiber (YS-70)	71,972	-1.5
Aramid fiber (K149)	19, 000	-2
PBO fiber (zairon)	28,500	-6

Please replace paragraph (c) on page 12 with the following amended paragraph:

(c) In the case of biaxial textile, if a crimp ratio is controlled to reduce, the textile is not so different from the one-way material and substantially utilized as the same as the one-way prepreg. The similar plate can be produced by laminating sheets of the biaxial textile along a direction of 0°, 45°, 45°, 0°. These four prepregs are same material formed by yarn doubling of two ~~kinds~~ or more than kinds of fibers, combining combining wool or a textile alternatively woven by these fiber bundles. Such a structure is shown in Fig. 2, Fig. 3(b) and Fig. 4(b).